Tecton ARCHITECTS

PACHECO ROSS ARCHITECTS
CES
FUSS & O'NEILL
ODEH ENGINEERS
RLB

LEXINGTON POLICE HEADQUARTERS

Agenda

- Temporary Police Bid Results
- Police Station Design Development 100% Phase Review
  - Document Review
  - Budget Update
  - Energy Model Review
  - LEED/LEX Update
  - Red List Update
- Solar Canopies Update

Temporary Police Bid Results

BID RESULTS

Temp Police Station:

- *Filed Sub-bids received on 1/13/2022*
    - *HVAC – (2) bidders*
        - *Ambient Temp Corp. is the apparent low @ $27,600*
    - *Electrical – (5) bidders.*
        - *(1) had to withdraw due to a clerical error*
        - *MEF Controls & Electrical Systems is the apparent low @ $124,500.*

BID RESULTS

Temp Police Station:

- *General Contractor bids received on 1/27/2022*
  - *(10) General Contractors submitted bids*
  - *GC construction estimated budget was approximately $350,000*
  - *Marino Construction is the apparent low bidder @ $351,100*
    - *Low FSBs were carried in their bid.*

  - *Bidding notes:*
  - *High bidder was $604,000*
  - *Average bid was $438,200*

  - *Low bidders are being reviewed and Tecton will provide a letter of recommendation shortly if there are no issues or irregularities.*

Police HQ Design Development 100% Phase Review

DOCUMENT STATUS

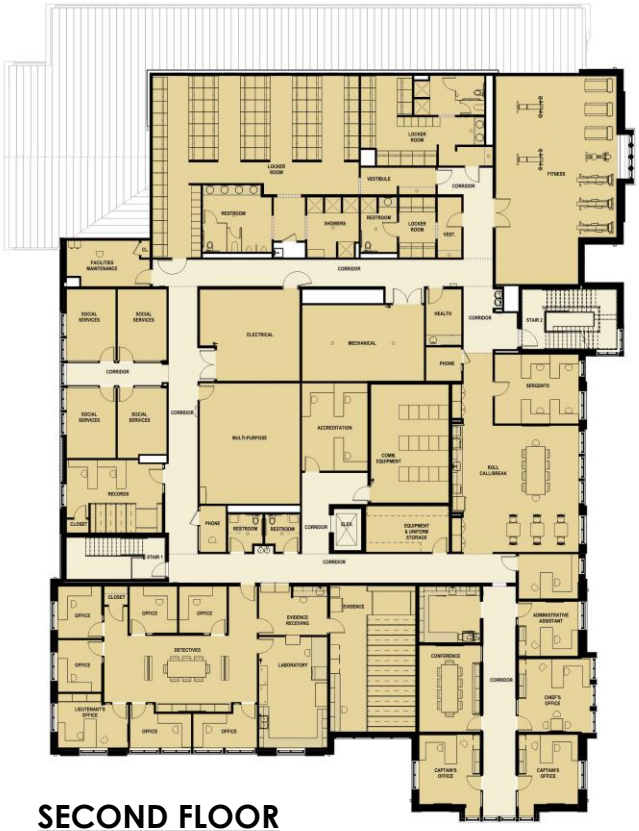
Design Development Documents:

- *Delivered on January 10, 2022 to the Town of Lexington, Estimator, Energy Modeler, Peer reviewers and Town's Cx*
    - *2 Volumes of specifications*
    - *171 30x42" Sheets*

- *Design Development Estimate Received on 1/27/22*
- *Energy model results Received on 1/27/22*
- *HDC Application has been filed ahead of the 2/3 deadline. Supplemental documentation is being developed and will be issued later this month*
- *SB Presentation for DD closeout / Approval to proceed to CD scheduled for 2/7/22*

FLOOR PLANS

FIRST FLOOR



SECOND FLOOR

ELEVATIONS

SOUTH ELEVATION

ELEVATIONS

EAST ELEVATION

ELEVATIONS

NORTH ELEVATION

ELEVATIONS

WEST ELEVATION

RENDERINGS

POLICE HEADQUARTERS | 100% DD

Budget Update

	2020 Temporary Police		Bid Results Temporary Police		Schematic Design NEW POLICE		July 2020 NEW + TEMP.	Design Development NEW POLICE		Feb. 2022 NEW + TEMP.
Facility Construction Costs					30,081 s.f.		$443	34,203 s.f.		$600
Construction estimated net cost:		$84,800		$351,100		$13,313,552	$13,398,352		$20,510,900	$20,862,000
General Conditions/Requirements	15.0%	$12,700			10.0%	$1,331,400	$1,344,100	7.6%	$1,558,800	incl. above
Bonds & Insurance	3.0%	$2,900			3.0%	$439,300	$442,200	3.0%	$662,100	incl. above
Overhead & Profit	3.5%	$3,500			4.0%	$603,400	$606,900	4.0%	$909,300	incl. above
Design/Estimating Contingency	15.0%	$15,600			7.5%	$1,176,600	$1,192,200	5.0%	$1,182,100	incl. above
Escalation Allowance	13.0%	$15,500			4.5%	$758,900	$774,400	7.0%	$1,737,600	incl. above
		(Q3/19 to Q3/21)					(Q3/20 to Q3/21)			(Q1/22 to Q2/23)
Total Construction Costs:		$135,000		$351,100		$17,623,152	$17,758,152		$26,560,800	$26,911,900
Suggested Adjustments and Contingencies:										
Relocate Hosmer House		$0		$0		$1,100,000	$1,100,000	LS	$300,000	$300,000
Unsuitable Soils Allowance		$0		$0	LS	$500,000	$500,000	LS	$500,000	$500,000
Owner's Construction Contingency	10.0%	$13,500	10.0%	$35,100	10.0%	$1,762,300	$1,775,800	7.5%	$1,992,100	$2,027,200
Total Adjustments and Contingency Costs:		$13,500		$386,200		$3,362,300	$3,375,800		$2,792,100	$3,178,300
Project Development and Equipment Costs										
Initial Study						$59,250	$59,250		$59,250	$59,250
Designer Fees		$11,900		$11,900		$2,090,540	$2,102,440		$2,090,540	$2,102,440
Additional Fee				$41,100		0	$0		$428,840	$469,940
Interior Furnishings and Loose Equipment		$5,000		$5,000		$300,000	$305,000		$300,000	$305,000
Communications Equipment Allowance		$65,000		$65,000		$650,000	$715,000		$650,000	$715,000
Building Technology		$0		$0		$0	$0		$250,000	$250,000
Hazardous Materials Abatement Allowance		$0		$0		$140,000	$140,000		$140,000	$140,000
Hygenists Fees		$0		$0		$50,000	$50,000		$50,000	$50,000
Mass. Ave. Site Investigation		$0		$0		$42,000	$42,000		$42,000	$42,000
Geotech CA services allowance		$0		$0		$40,000	$40,000		$40,000	$40,000
Red List Designer Fees		$0		$0		$35,000	$35,000		$35,000	$35,000
FF&E Design Fees		$0		$0		$35,000	$35,000		$35,000	$35,000
Communications Equipment Consultant		$0		$0		$105,000	$105,000		$105,000	$105,000
OPM Fees		$0		$0		$350,000	$350,000		$475,000	$475,000
Building Commissioning		$0		$0		$75,000	$75,000		$75,000	$75,000
Envelope Commissioning		$0		$0		$20,000	$20,000		$20,000	$20,000
Materials Testing		$0		$0		$65,000	$65,000		$65,000	$65,000
Relocation Costs (by owner)		$25,000		$25,000		$50,000	$75,000		$50,000	$75,000
Bidding Expenses		$7,500		$7,500		$10,000	$17,500		$10,000	$17,500
Legal Fees (by owner)		$5,000		$5,000		$5,000	$10,000		$5,000	$10,000
Project Development Contingency		$11,900		$16,100		$340,300	$352,200		$340,300	$356,400
		$131,300		$176,600		$4,402,840	$4,534,140		$5,265,930	$5,442,530
Total Opinion of Probable Project Costs:		**$279,800**		**$913,900**		**$25,388,292**	**$25,668,092**		**$34,618,830**	**$35,532,730**

POLICE HEADQUARTERS | BUDGET

Design Development Energy Model

ENERGY MODEL RESULTS - SUMMARY

Simulation Results			
	LEED Baseline Model	**MA Stretch Code Baseline Model**	**Proposed Design Model**
Site Electricity Energy Use (kWh)	576,017	329,090	385,800
Site Natural Gas Energy Use (Therm)	0	5,338	0
Total Site Energy Use (kBtu)	1,965,369	1,656,681	1,316,350
Site EUI (kBtu/SF)	60	50	40
Energy Analysis			
	LEED Model	**MA Stretch Code Model**	**Note**
Savings %	33% (Cost Savings)	21% (Energy Savings)	without Solar PV
Result	12 points - LEED minimum performance credit		

Solar PV			
	LEED Baseline Model	**MA Stretch Code Baseline Model (780 CMR-C406.1 PACKAGE)**	**Proposed Design Model**
Total Site Energy Use (kBtu)	1,965,369	1,656,681	1,316,350
Solar PV Production (kWh/yr)	0	50,000	388,000
Total Site Energy Use minus solar PV production (kBtu)	1,965,369	1,486,081	-7,506
Site EUI with solar (kBtu/SF)	60	29	0
Energy Analysis with Solar PV			
	LEED Model	**MA Stretch Code Model**	**Note**
Savings %	100% (Cost Savings)	100% (Energy Savings)	includes solar PV
Result	18 points + 1 exemplary performance credit		

LEED/LEX Scorecard Update

LEED/LEX SCORECARD

Y	?	N			
1			Credit	Integrative Process	1
7	0	25	**Location and Transportation**		32
		16	Credit	LEED for Neighborhood Development Location	16
1			Credit	Sensitive Land Protection	1
1		1	Credit	High Priority Site	2
2		3	Credit	Surrounding Density and Diverse Uses	5
		5	Credit	Access to Quality Transit	5
1			Credit	Bicycle Facilities	1
1			Credit	Reduced Parking Footprint	1
1			Credit	Green Vehicles	1
8	2	0	**Sustainable Sites**		10
Y			Prereq	Construction Activity Pollution Prevention	Required
1			Credit	Site Assessment	1
2			Credit	Site Development - Protect or Restore Habitat	2
1			Credit	Open Space	1
3			Credit	Rainwater Management	3
	2		Credit	Heat Island Reduction	2
1			Credit	Light Pollution Reduction	1
4	2	5	**Water Efficiency**		11
Y			Prereq	Outdoor Water Use Reduction	Required
Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Building-Level Water Metering	Required
1	1		Credit	Outdoor Water Use Reduction	2
2	1	3	Credit	Indoor Water Use Reduction	6
		2	Credit	Cooling Tower Water Use	2
1			Credit	Water Metering	1
23	2	8	**Energy and Atmosphere**		33
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
5	1		Credit	Enhanced Commissioning	6
12	1	5	Credit	Optimize Energy Performance - The town will target onsite building energy use intensity (kBTUs/sq ft) for new buildings to be 30% less than ASHRAE 90.1-(current version)	18
1			Credit	Advanced Energy Metering	1
	0	2	Credit	Demand Response - Install and properly maintain a building management system to track and manage peak demand for energy cost reduction and emergency load shedding	2
3			Credit	Renewable Energy Production - Target at least 20% onsite renewable energy, may be supplemented with offsite energy.	3
Y			Lex	Utilize energy storage when cost effective to lower peak demand charges and integrate with onsite solar Commissioning/Retro-Commissioning	
		1	Credit	Enhanced Refrigerant Management	1
2			Credit	Green Power and Carbon Offsets	2
Y			Lex	Evaluate and present options for achieving net zero energy use	
Y			Lex	All electric, zero emissions on site design (excluding fuel for emergency backup power generators and backup heating systems).	
5	1	5	**Materials and Resources**		13
Y			Prereq	Storage and Collection of Recyclables	Required
Y			Prereq	Construction and Demolition Waste Management Planning	Required
		3	Credit	Building Life-Cycle Impact Reduction	5
1		1	Credit	Building Product Disclosure and Optimization - Environmental Product Declarations	2
1	1		Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
1		1	Credit	Building Product Disclosure and Optimization - Material Ingredients	2
2			Credit	Construction and Demolition Waste Management	2
11	1	4	**Indoor Environmental Quality**		16
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
2			Credit	Enhanced Indoor Air Quality Strategies	2
2	1		Credit	Low-Emitting Materials	3
1			Credit	Construction Indoor Air Quality Management Plan	1
1		1	Credit	Indoor Air Quality Assessment	2
1			Credit	Thermal Comfort	1
2			Credit	Interior Lighting	2
1		2	Credit	Daylight	3
		1	Credit	Quality Views	1
1			Credit	Acoustic Performance	1
Y			Lex	Enhanced Filtration - Install and properly maintain particulate matter filters as appropriate for building type and use to protect health of the occupant.	
Y			Lex	Indoor CO2 levels per Lexington Board of Health guidelines. (BOH Memo dated December 18, 2015, Table 1)	
Y			Lex	Toxics - Avoid the use of red list substances as recommended by Lexington Board of Health (memo dated March 4, 2018), except when no practical alternative is available. Utilize Healthy Building Network (or equivalent) information in the design and selection of materials and consider using products and services established by the Environmentally Preferable Purchasing program or other successor program of the Commonwealth of Massachusetts or other similar cooperative purchasing programs	
4	0	2	**Innovation**		6
1			Credit	Innovation : Green Building Education	1
1			Credit	Innovation : Purchasing - Lamps	1
1			Credit	Exemplary Performance: Renewable Energy Production (15%)	1
		1	Credit	Innovation	1
		1	Credit	Innovation	1
1			Credit	LEED Accredited Professional	1
3	0	1	**Regional Priority**		4
1			Credit	Regional Priority: Renewable Energy Production (Achieve 3 points)	1
		1	Credit	Regional Priority: Building Life Cycle Impact Reduction (Achieve 2 points)	1
1			Credit	Regional Priority: Site Development - Protect or Restore Habitat (Achieve 2 points)	1
1			Credit	Regional Priority: Optimize Energy Performance (Achieve 8 points)	1
Y			Lex	Buildings shall be designed to deliver services based on the resilience levels defined in the Integrated Design Procedure. The resilience level for a particular building shall be determined in consulatation with the building stakeholders and shall be consistent with the planned use of the building in the Town's Emergency Management Plan	
66	8	50	**TOTALS**	Possible Points:	110

Certified: 40 to 49 points, **Silver:** 50 to 59 points, **Gold:** 60 to 79 points, **Platinum:** 80 to 110

Lexington minimum target range is 50-59 points

Red List Update

RED LIST STATUS

Division 3:

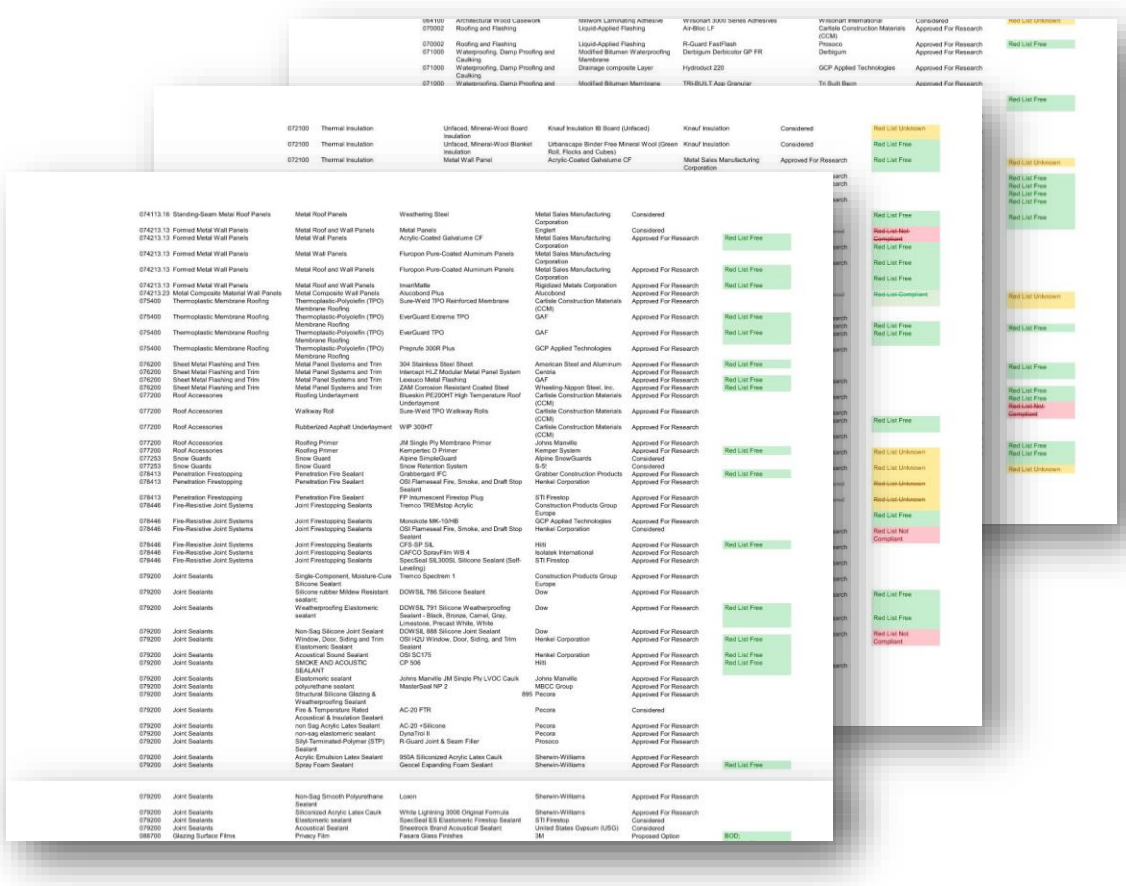
- ~~*Only (1) product so far has been identified as red-list non-compliant*~~
  - ~~*Crystalline waterproofing admixture is being utilized as an additional layer of protection for the Mechanical Room on the 2nd floor.*~~
    - *Alternative detailing has been provided*
- *Some products are red-list free while others are limited on their product disclosures and are unknown.*

Spec. Number	Specification Name	Product Type	Product Name	Manufacturer	Consideration	Red List Status
030510	Concrete Moisture Vapor Reduction Admixture	Concrete Moisture Vapor Reduction Admixture (MVRA)	Barrier One Admixture	Concrete Moisture Solutions	Approved For Research	Red List Unknown
030510	Concrete Moisture Vapor Reduction Admixture	Concrete Moisture Vapor Reduction Admixture (MVRA)	MVRA 900	ISE Logik Industries	Approved For Research	Red List Free
030510	Concrete Moisture Vapor Reduction Admixture	Concrete Moisture Vapor Reduction Admixture (MVRA)	Vapor Lock 20/20	Specialty Products Group	Approved For Research	Red List Unknown
033000	Cast-In-Place Concrete	Concrete or Shop Floor			Considered	Red List Unknown
033000	Cast-In-Place Concrete	Concrete Floor			Considered	Red List Unknown

RED LIST STATUS

Division 7:

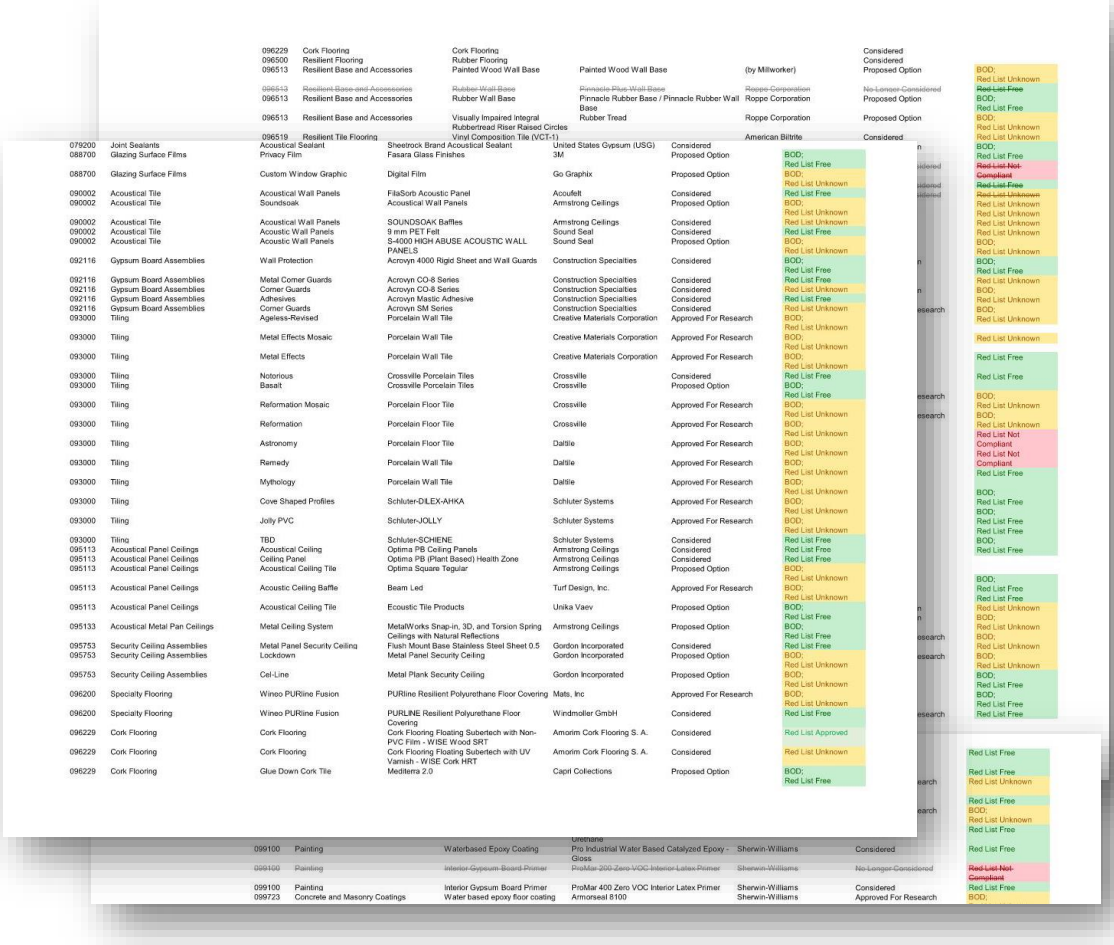
- *Only (2) products so far have been identified as red-list non-compliant*
    - *Both are alternate fluid-applied vapor-retarding membrane air barriers by different manufacturers*
        - *Additional research is on-going for alternates.*



RED LIST STATUS

Division 9:

- *Only (2) products so far have been identified as red-list non-compliant*
  - *Terrazzo flooring*
  - *Resinous epoxy flooring*
    - *Redlist free epoxy flooring specification has been coordinated with Durachip*

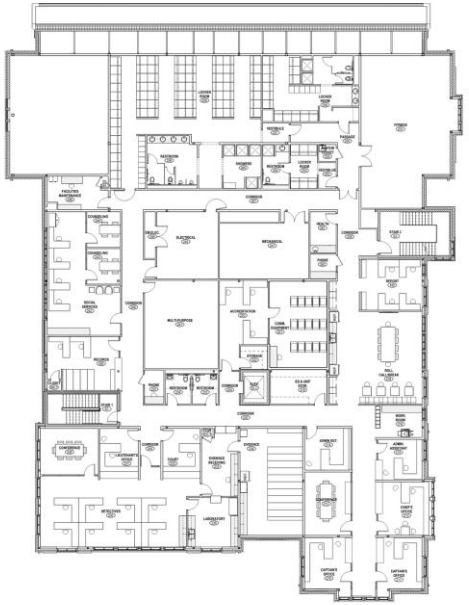


OUTLIERS | **NON-COMPLIANT PRODUCTS**

Epoxy Terrazzo

- Specified in **Lobby**
- Contains **Epichlorohydrin-bisphenol A Resin**
- **LT-P1** Greenscreen score *(what this means ~ meets hazard classifications, but there is some uncertainty and further research is needed)*
- *Other options explored:*
    - *Sand cushion terrazzo +$6,500 material only, more labor, longer cure time*
        - *Additional costs for lowered slab, additional joints*
        - *Reduced finish options*
        - *Fewer installers*
    - *DuraCryl Durrabella vegetable oil polymer +$19,500 total add*

FIRST FLOOR



SECOND FLOOR

RED LIST STATUS

Division 12:

- *Construction Contract*
  - *Only (3) products so far have been identified as red-list non-compliant*
    - *Blackout window shades*
    - *Epoxy countertop*
    - *Solid Surface countertop*
    - ***Researching alternates***
  - *Fabrics for built in furniture is red-list complaint*

- *FFE Contract*
  - *Furniture design and specification will begin mid-summer of 2022*

122413	Roller Window Shades	Window shades	Chelsea Blackout 0250 Series	MechoSystems	Proposed Option	Red List Unknown BOD; Red List Not Compliant
122413	Roller Window Shades	Window shades	EcoVeil Screens 0950 Series, 1550 Series, 1350 Series	MechoSystems	Proposed Option	BOD; Red List Unknown
122413	Roller Window Shades	Window shades	EcoVeil Sheer Shadecloth: 6850 Series (1% Open) and 6750 Series (3% Open)	MechoSystems	Considered	Red List Free
122413	Roller Window Shades	Window shades	Mecho/5, Mecho/5x, and UrbanShade Manual Hardware Systems	MechoSystems	Proposed Option	BOD; Red List Compliant
122413	Roller Window Shades	Window shades	Roller Shade Hardware (Motorized)	MechoSystems	Proposed Option	BOD; Red List Compliant
123631	Simulated Stone Countertops	Epoxy Countertop	ClassicTop Bevel Edge	Durcon	Proposed Option	BOD; Red List Not Compliant
123631	Simulated Stone Countertops	Quartz Countertop	Quartz Countertop	Wilsonart International	Approved For Research	BOD; Red List Unknown
123631	Simulated Stone Countertops	Solid Surface Material	Wilsonart Solid Surface	Wilsonart International	Proposed Option	BOD; Red List Not Compliant
123816	Entrance Floor Grilles	MasterTread	Advance Flooring Entrance Matting Systems with Polyamide Inserts	Advance Flooring Systems	Considered	Red List Free
123816	Entrance Floor Grilles	Entrance System	Mighty Track	Mats, Inc	Approved For Research	BOD; Red List Unknown
123816	Entrance Floor Grilles	Entrance System	Trilogy Tile	Mats, Inc	Approved For Research	BOD; Red List Unknown

RED LIST STATUS – SIMILAR SPECS USED AS HARVARD STANDARDS

-Products in Harvard's building standards

Company: Roppe (We are using the Roppe rubber treads, and the rubber base)

-Harvard business School-Rubber treads

-Harvard Divinity Andover Hall-Rubber treads, rubber tile

-Harvard Hilles- Rubber Sheet, rubber wall base

-Harvard Leverett House-Rubber tuflex sports floor

-Harvard School of Dental Medicine-Rubber treads, rubber tile, rubber base, stained concrete

-Harvard Library Book Storage-Rubber sheet

Company: Mats Inc (We are using the Pureline collection throughout all the corridors)

-Harvard resilient flooring standard is the Pureline

Company: Bentley Mills (We are using Bentley carpet)

Bentley Mills carpets are one of Harvard's carpet standards

Company: Shaw Contract (We are using a Shaw Carpet)

Shaw Contract carpets are one of Harvard's carpet standards

Company: Armstrong Ceilings (We are specifying Armstrong ceilings)

Armstrong ceilings are a Harvard ceiling standard

Company: Mecho Shade (We are using the Mecho Shade EcoVeil Sheer)

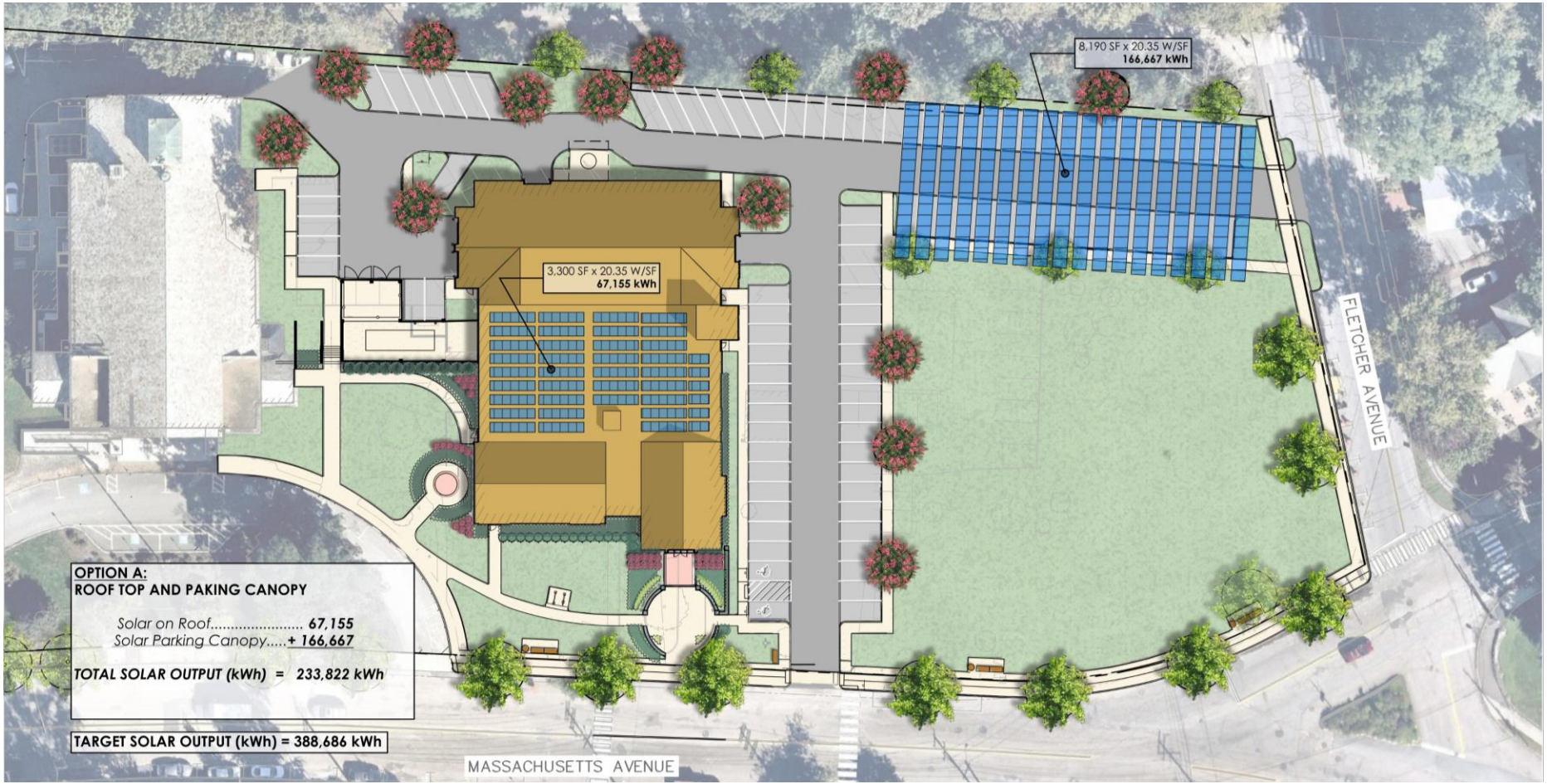
Mecho Shade EcoVeil Sheer is a standard window treatment

Solar Canopies

Solar PV Generation v. Consumption

- Assumed building consumption based on latest energy model = ~385,800 kWh annually
- Solar PV roof top maximum potential generation
  - Roof top – 3,300 sq ft = ~67,000 kWh annually
- **Remainder** needed to match building consumption
  - **~318,800 kWh annually**
- Potential design solutions to reach the target solar energy output
  - Solar Parking Canopy
  - Solar Pavilion over Fletcher Field
- The following slides explore these options in more detail

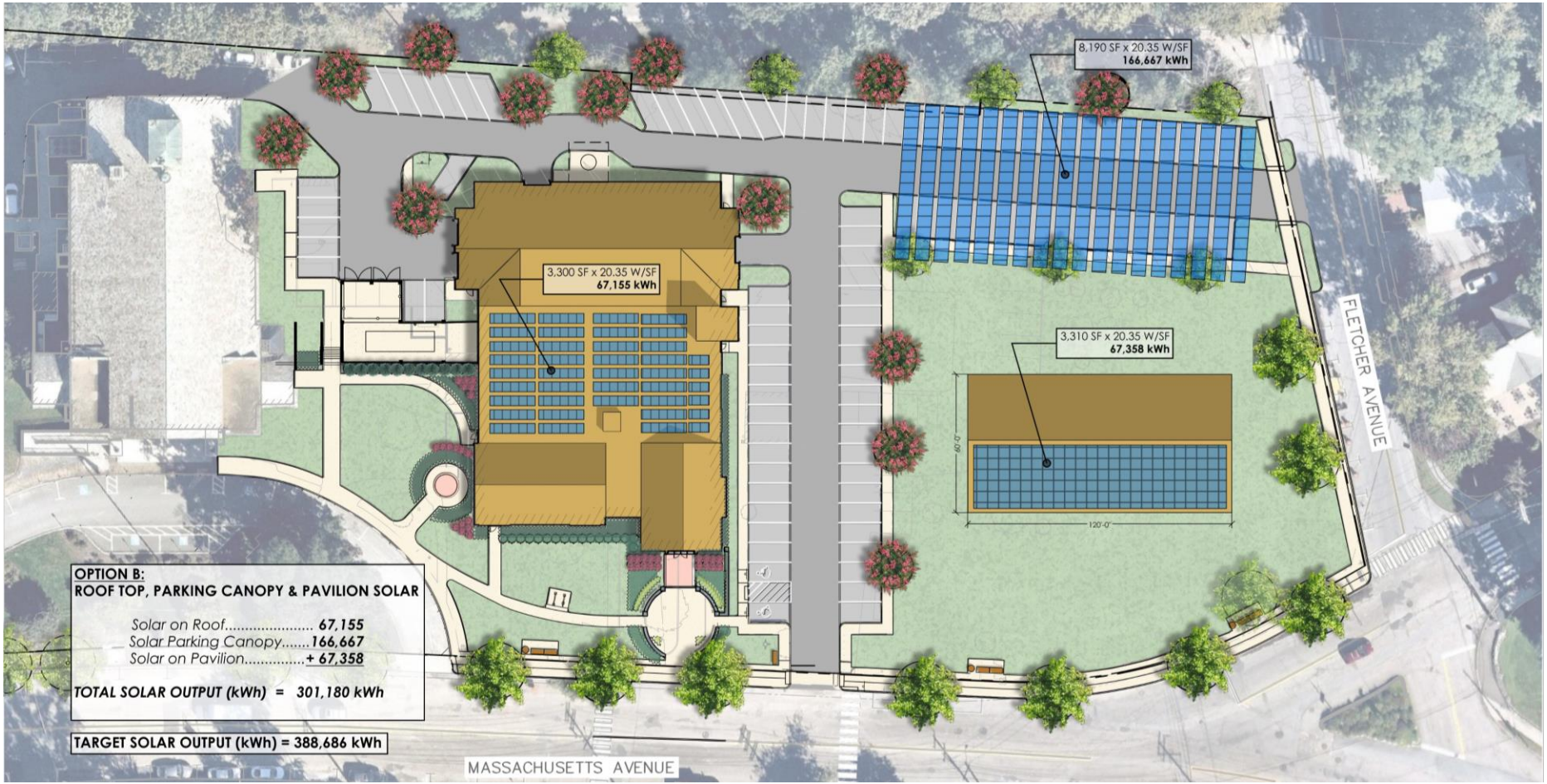
SITE PLAN


8,190 SF x 20.35 W/SF
166,667 kWh
3,300 SF x 20.35 W/SF
67,155 kWh
FLETCHER AVENUE
OPTION A:
ROOF TOP AND PAKING CANOPY
Solar on Roof..... 67,155
Solar Parking Canopy.....+ 166,667
TOTAL SOLAR OUTPUT (kWh) = 233,822 kWh
TARGET SOLAR OUTPUT (kWh) = 388,686 kWh
MASSACHUSETTS AVENUE

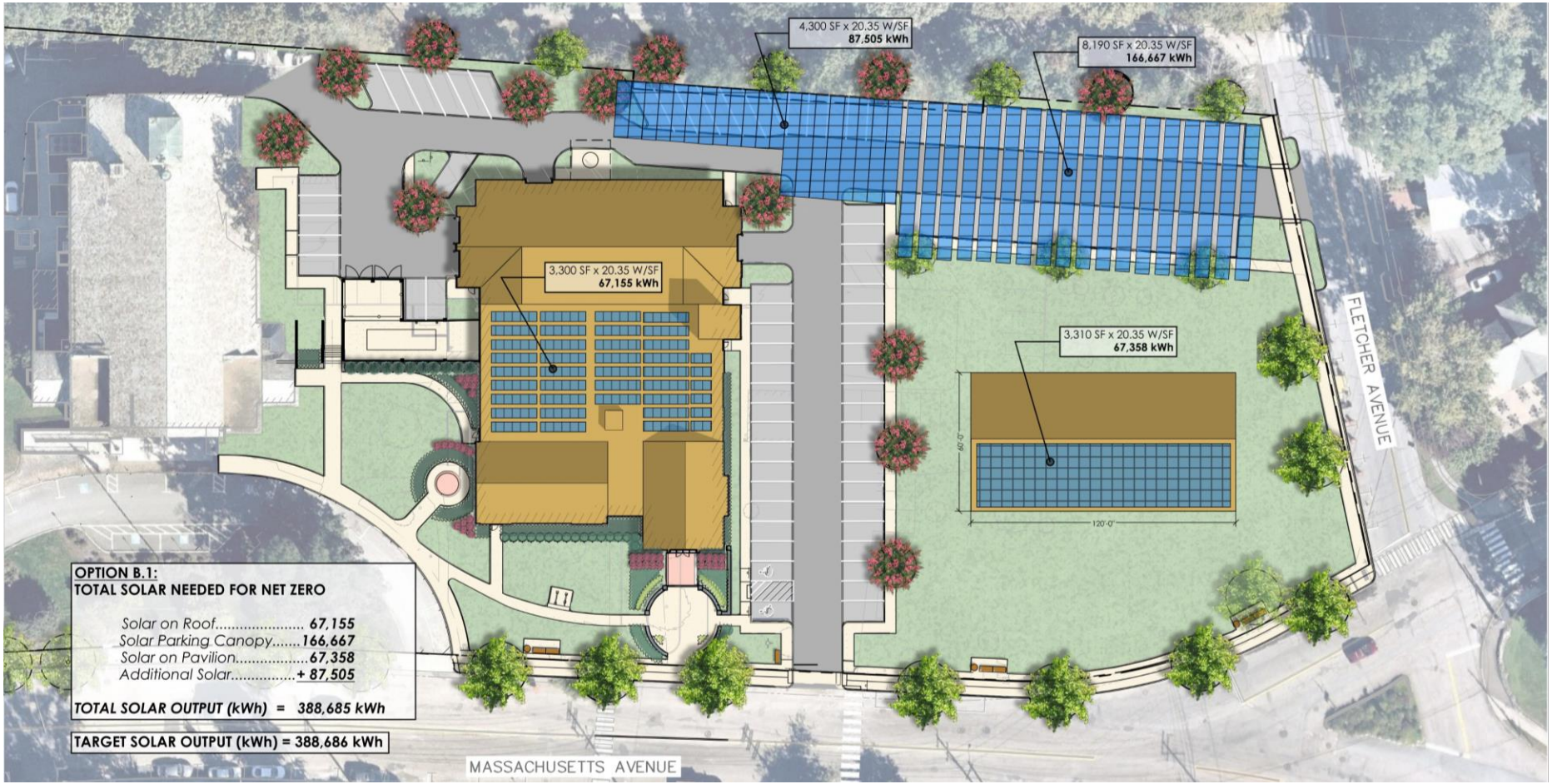
SITE PLAN


7,600 SF x 20.35 W/SF
154,660 kWh
8,190 SF x 20.35 W/SF
166,667 kWh
3,300 SF x 20.35 W/SF
67,155 kWh
FLETCHER AVENUE
OPTION A.1:
TOTAL SOLAR NEEDED FOR NET ZERO
Solar on Roof..... 67,155
Solar Parking Canopy.....166,667
Additional Solar.....+ 154,660
TOTAL SOLAR OUTPUT (kWh) = 388,482 kWh
TARGET SOLAR OUTPUT (kWh) = 388,686 kWh
MASSACHUSETTS AVENUE

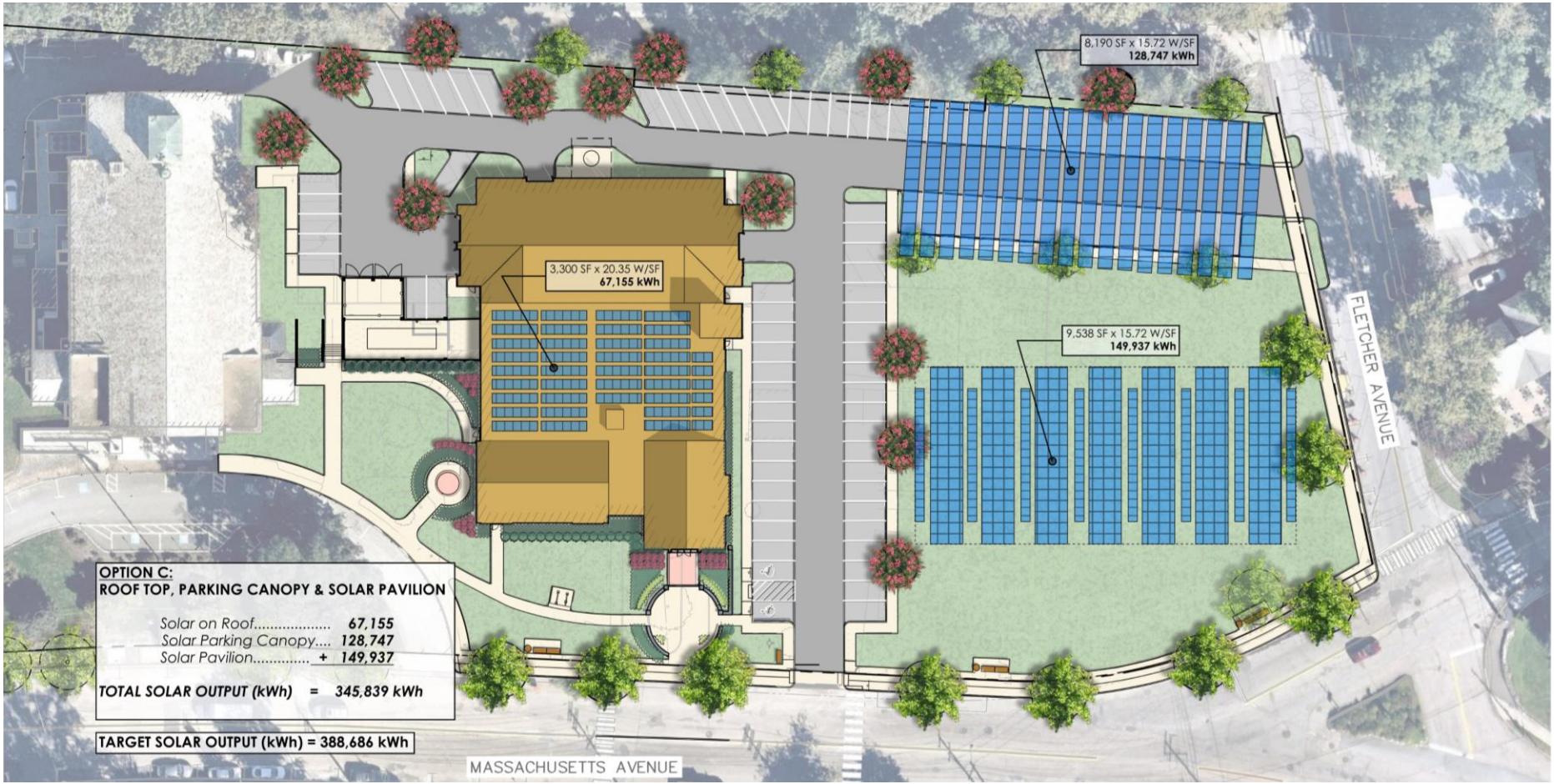
SITE PLAN


8,190 SF x 20.35 W/SF
166,667 kWh
3,300 SF x 20.35 W/SF
67,155 kWh
3,310 SF x 20.35 W/SF
67,358 kWh
FLETCHER AVENUE
60'-0"
120'-0"
OPTION B:
ROOF TOP, PARKING CANOPY & PAVILION SOLAR
Solar on Roof..... 67,155
Solar Parking Canopy.....166,667
Solar on Pavilion.....+ 67,358
TOTAL SOLAR OUTPUT (kWh) = 301,180 kWh
TARGET SOLAR OUTPUT (kWh) = 388,686 kWh
MASSACHUSETTS AVENUE

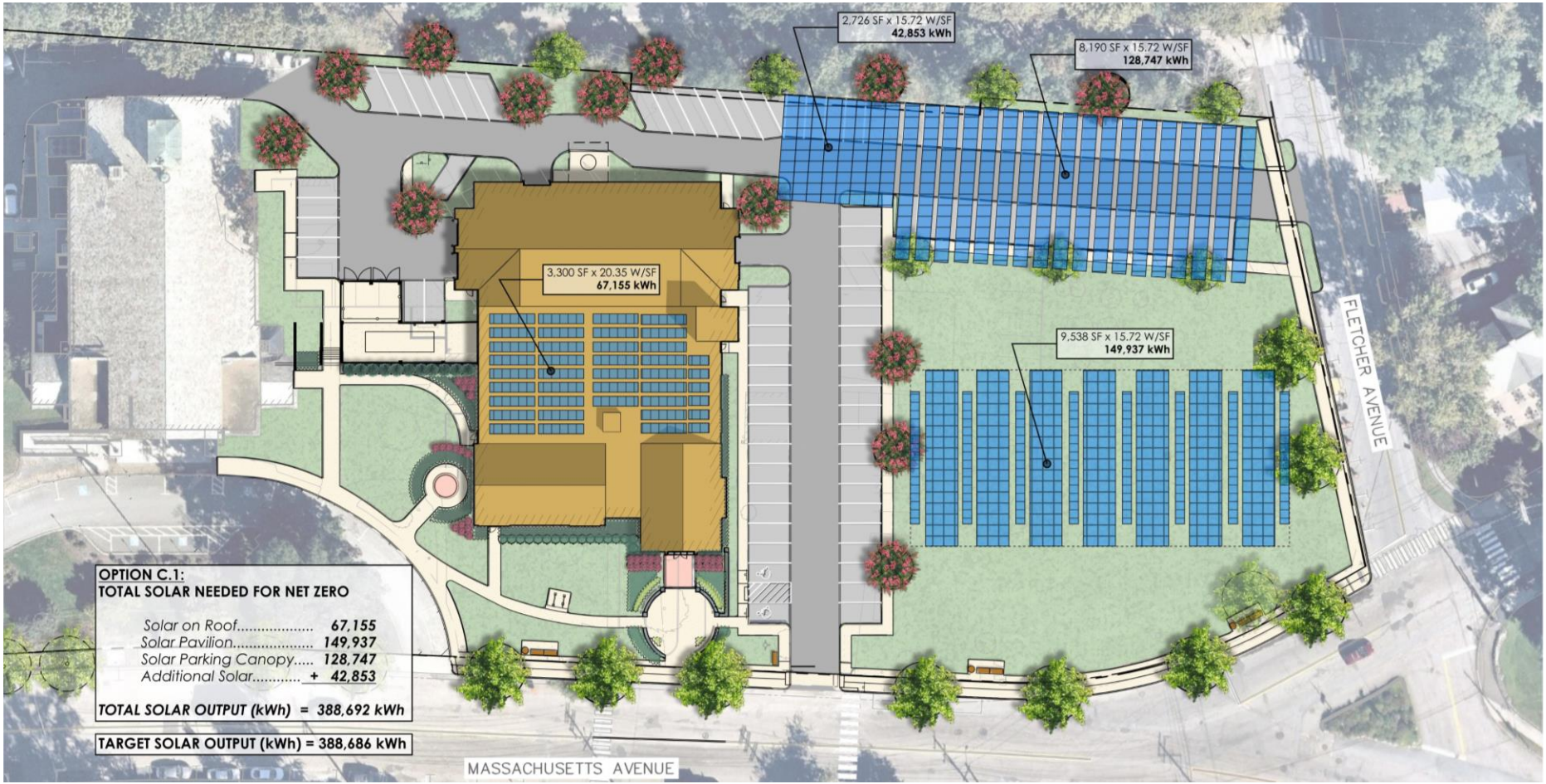
SITE PLAN


4,300 SF x 20.35 W/SF
87,505 kWh
8,190 SF x 20.35 W/SF
166,667 kWh
3,300 SF x 20.35 W/SF
67,155 kWh
3,310 SF x 20.35 W/SF
67,358 kWh
FLETCHER AVENUE
MASSACHUSETTS AVENUE
OPTION B.1:
TOTAL SOLAR NEEDED FOR NET ZERO
Solar on Roof..... 67,155
Solar Parking Canopy.....166,667
Solar on Pavilion.....67,358
Additional Solar.....+ 87,505
TOTAL SOLAR OUTPUT (kWh) = 388,685 kWh
TARGET SOLAR OUTPUT (kWh) = 388,686 kWh

SITE PLAN


8,190 SF x 15.72 W/SF
128,747 kWh
3,300 SF x 20.35 W/SF
67,155 kWh
9,538 SF x 15.72 W/SF
149,937 kWh
FLETCHER AVENUE
OPTION C:
ROOF TOP, PARKING CANOPY & SOLAR PAVILION
Solar on Roof..... 67,155
Solar Parking Canopy.... 128,747
Solar Pavilion..... + 149,937
TOTAL SOLAR OUTPUT (kWh) = 345,839 kWh
TARGET SOLAR OUTPUT (kWh) = 388,686 kWh
MASSACHUSETTS AVENUE

SITE PLAN


2,726 SF x 15.72 W/SF
42,853 kWh
8,190 SF x 15.72 W/SF
128,747 kWh
3,300 SF x 20.35 W/SF
67,155 kWh
9,538 SF x 15.72 W/SF
149,937 kWh
FLETCHER AVENUE
OPTION C.1:
TOTAL SOLAR NEEDED FOR NET ZERO
Solar on Roof..... 67,155
Solar Pavilion..... 149,937
Solar Parking Canopy..... 128,747
Additional Solar..... + 42,853
TOTAL SOLAR OUTPUT (kWh) = 388,692 kWh
TARGET SOLAR OUTPUT (kWh) = 388,686 kWh
MASSACHUSETTS AVENUE

SITE PLAN

SOLAR CANOPY PRECEDENT IMAGES

SOLAR PARKING CANOPY CONCEPTUAL RENDERINGS

SOLAR PARKING CANOPY CONCEPTUAL RENDERINGS

SOLAR PARKING CANOPY CONCEPTUAL RENDERINGS

SOLAR PAVILION CONCEPTUAL RENDERINGS

SOLAR PAVILION CONCEPTUAL RENDERINGS

Tecton ARCHITECTS

PACHECO ROSS ARCHITECTS
CES
FUSS & O'NEILL
ODEH ENGINEERS
RLB

LEXINGTON POLICE HEADQUARTERS